AMENDMENT TO THE CLAIMS

1. (Currently Amended)   A method for computing an ~~FFT~~fast Fourier transform, the method comprising:

    (a) receiving a plurality of time-ordered first data values, said first data values having a total of N-data points;

    (b) sequentially storing in a first memory each of said plurality of time-ordered first data values in the time-order;

    (c) providing in a second memory a plurality of twiddle factors stored in sequential locations in a bit reversed order;

    (d) reading R input butterfly data values of said plurality of first data values where each of said R butterfly data values are separated by N/R first data values in said plurality of first data values;

    (e) performing a radix R butterfly calculation on said R butterfly input data;

    (f) providing R butterfly output data values;

    (g) sequentially storing said R butterfly output data values in a third memory in the order calculated;

    (h) performing said steps (c) - (g) N/R x 2 times.

2. (Currently Amended)   The method as in claim 1 further comprising the steps of:

    sequentially replacing said plurality of first data values in said first memory with said plurality of sequentially stored data in said ~~second~~ third memory location;

    repeating steps (c) - (h) a total of $\log_r(n)$ ~~x~~ times.

3. (Original) The method as in claim 1, wherein R=2.

4. (Original) The method as in claim 1, wherein said R=4.

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5. (Currently Amended)   An apparatus for calculating an ~~FFT~~fast Fourier transform, the apparatus comprising:

a first memory for storing a plurality of time-ordered N input data values, said plurality of N input data values being stored sequentially in the ~~a~~ time-ordered manner;

a second memory for storing a plurality of twiddle factor values in a bit-reversed order;

a third memory for sequentially storing a plurality of output data values in said order calculated; and

a radix R ~~FFT~~fast Fourier transform ~~calculator coupled to said first, second, and third memories, said radix R ~~FFT~~fast Fourier transform being operative to receive from said first memory, R input data values, each of the R input data values being separated by N/R input data values, said radix R FFT calculator further being operative to receive at least one twiddle factor value from said second memory, and said radix R FFT calculator further being operative to calculate R output data values and to write said R output data values sequentially into said third memory in the order said R output data values are calculated.

6. (Original)   The apparatus of claim 5 wherein R equals 2.

7. (Original)   The apparatus of claim 5 wherein R equals 4.

8. (Currently Amended)   A ~~DSP~~digital signal processing apparatus for performing an ~~FFT~~fast Fourier transform calculation comprising:

a digital signal processor ~~DSP~~operative to receive a plurality of time-ordered first data values, said first data values having a total of N-data points;

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said <u>digital signal processor</u> ~~DSP~~ operative to <u>sequentially</u>
store in a first memory each of said plurality of first data
values <u>in the time-order</u>;

said <u>digital signal processor</u>~~DSP~~ operative to provide in a
second memory a plurality of twiddle factors stored in sequential
locations in a bit reversed order;

said <u>digital signal processor</u> ~~DSP~~ operative to read R input
butterfly data values of said plurality of first data values where
each of said R butterfly data values are separated by N/R data
points in said plurality of first data values;

said <u>digital signal processor</u> ~~DSP~~ operative to perform a
radix R butterfly calculation on said R butterfly input data;

said <u>digital signal processor</u> ~~DSP~~ operative to provide R
butterfly output data values; and

said <u>digital signal processor</u> ~~DSP~~ operative to sequentially
store said R butterfly output data values in a third memory <u>in the
order said R butterfly output data values are calculated</u>.

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